3.0 Project Alternatives

3.1 Project Corridor Development

A highway needs and study plan was prepared by the Illinois Highway Study Commission in 1963-1969. The plan defined the supplemental freeway system as "principal routes which will be constructed to standards similar to interstate standards and which will have full control of access." In 1969, the Illinois Legislature authorized the selling of bonds for the purpose of improving existing primary routes and financing of the Illinois Supplemental Freeway System. After the Illinois Legislature authorized the selling of bonds for improving existing primary routes and financing of the Illinois Supplemental Freeway System, the Illinois Division of Highways was then directed to prepare Corridor Location Reports to evaluate and select corridors for the supplemental freeway system.

Historically, several different corridor approvals were granted in the vicinity of the U.S. Route 34 project area. A corridor from Gulfport to southwest of Gladstone was approved in 1967. The corridor from southwest of Gladstone to Monmouth was approved in 1970, which included routings around the south and east as well as around the north and west of Monmouth. In 1972, the F-413 corridor report was approved. The F-413 corridor from the Rock Island County line to south of Monmouth included considerations of extending Route 67 through the Monmouth area but did not take into consideration improvements to U.S. Route 34 around Monmouth.

In order to provide a more current determination of the corridor, a re-evaluation report was prepared in May 1997. The purpose of re-evaluating the approved corridor was to review the factors which established the original corridor and to confirm that the original corridor, with revised limits, was still valid as a precursor for the proposed Location/Design Study for a four-lane divided highway. The re-evaluation report sought and received agreement on the use of this corridor for continuing the proposed Design Report and preparation of the appropriate environmental document for a roadway improvement between the Gulfport area and the Monmouth area. Corridor limits were amended to reflect the current environmental conditions and existing infrastructure. Improvements and planned improvements made since 1970 were utilized in determining the corridor limits for the proposed design and environmental studies.

Re-evaluation of the previously approved F-404 corridors determined that the expanded corridors were still valid for study alignments of the upgrading of U.S. Route 34 to a four-lane expressway or freeway facility from Gulfport to the Monmouth area, including alternative routings around the west and north of Monmouth and around the south and east of Monmouth.

3.2 Determination of Facility Type

Given the potential for the construction of an improved roadway facility between the City of Monmouth and Carman Road, an initial investigation was conducted to determine the most appropriate facility type that would fulfill the transportation needs and objectives identified in the project Purpose and Need. The following sections summarize the facility determination process.

3.2.1 Carman Road to U.S. Route 67 an Upgraded Two-Lane Facility

Traffic analyses were conducted for the purpose of determining the viability of maintaining a two-lane facility. The capacity analysis concluded that an upgraded two-lane facility would not efficiently carry projected traffic over much of the project corridor with design year (year 2025) volumes falling to LOS C and D (see Section 1.2.3). Results of the capacity analysis are summarized in Table 3-1.

Table 3-1. Capacity Analysis

Section	Existing Two-Lane				Upgraded Two-Lane			
	2005 LOS		2025 LOS		2005 LOS		2025 LOS	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Carman Road to TR66 (Floodplain)	C*	C	C	D	B	C	C	D
TR66 to TR111 (Bluff)	D	E	E	E	C	C	C	D
TR111 to CH2 (Biggsville)	D	D	D	E	B	C	C	D
CH2 to TR18	C	C	D	D	B	B	C	C
TR18 to US 67 (Kirkwood)	B	B	C	C	B	B	B	C

* See Section 1.2.3, System Capacity, for definitions.

Due to the reduced LOS, an improved two-lane highway would not meet the project needs to improve system capacity, system continuity and travel safety, and was therefore eliminated from further study.

3.2.2 Carman Road to U.S. Route 67 Expressway Versus Freeway

Studies were conducted to compare freeway and expressway facilities in order to determine which facility type would best serve the needs of the project and the project corridor. Analysis indicated that a four-lane expressway would provide adequate LOS for projected traffic. Comparably, local traffic and those communities occurring within the project corridor would be better served by an expressway due to a greater number of access points and the maintenance of a system that would reduce adverse travel. An expressway would be less costly to build and maintain, would require fewer bridges and less pavement (i.e., ramps and access roads), would require less total right-of-way, and, would generally maximize the use of existing right-of-way. An additional benefit of an expressway facility type over a freeway would be the relative ease of phasing construction.

For these reasons, it was determined to carry forward studies for an expressway type facility west of Monmouth.

3.2.3 Monmouth Area South and East Bypass

Traffic studies including an origin and destination (O&D) survey of the Monmouth area were conducted to evaluate the viability of a bypass to the south and east of the city (Figure 3-1). The survey results included the following facts:

- Almost half the vehicles traveling through the area stop in Monmouth.
- Given a new southeast alignment, with an interchange at the southeast side of Monmouth, some 45 percent of the traffic would use the new alignment [approximately 4,500 vehicles (1995 ADT)].
- Given a new southeast alignment, without an interchange at the southeast side of Monmouth, some 30 percent of the traffic would use the new alignment [approximately 3,200 vehicles (1995 ADT)].

Access for a new southeast bypass would be via interchanges and were considered at Illinois Route 164, Broadway, Cameron Road south of the railroad tracks, and at Main Street South (see Figure 3-1). Service roads would be required to connect the existing street system to the interchanges.

The results of the investigation indicated that a southeast bypass of Monmouth was not going to meet the project's Purpose and Need for the following reasons:

- only 30 to 45 percent of existing traffic would use a southeast bypass;
- the southeast bypass would not address the current accident and safety issues along the existing route through Monmouth;
- the expense of constructing and maintaining a new bypass, as well as maintaining the existing route, would be more costly than just upgrading and maintaining the existing northwest route;
- the existing northwest expressway could be upgraded as a freeway or as an expressway to serve current and future traffic; and
- the southeast bypass would require all new right-of-way.

3.2.4 Monmouth Area Upgrade Versus Freeway

Upon eliminating the southeast bypass as a viable improvement, two alternates (a freeway and an upgraded expressway) were studied for the improvement to the existing northwest expressway around Monmouth. Both the freeway and updated expressway concepts were developed and evaluated. The following presents a summary of the concept elements and the evaluation of each.

Freeway Concept

A freeway concept with fully-controlled access would provide motorists access to and from U.S. Route 34 via interchanges at four locations (Figure 3-2):

- U.S. Route 67 south of town (existing interchange location);
- Either at Clinton or Euclid, on the west side of Monmouth;
- Main Street/U.S. Route 67 (four design options were considered); and
- Illinois Route 164 east of Monmouth with a connection to Euclid on the east side.

With a freeway concept, several existing at-grade intersections would either be closed or have an overpass structure as follows:

- 185th Avenue (11th Avenue) would be closed;
- Broadway would cross over a bridge over U.S. Route 34;
- Harlem would cross over a bridge over U.S. Route 34;
- G Street would be closed;
- 6th Street would cross over a bridge over U.S. Route 34;
- 11th Street would cross over a bridge over U.S. Route 34; and
- 87th Street would be closed.

Upgraded Expressway Concept

This concept allows for direct access at all existing at-grade locations. Most locations would be improved to include left turn lanes along U.S. Route 34, other turn lanes, and signals or signal improvements to provide increased safety at high capacity intersections. Access control for the upgraded expressway was evaluated on a case-by-case basis for each of the intersecting streets to further minimize impacts without compromising safety and efficiency of the roadway.

The upgraded expressway concept was recommended for further study because it had fewer displacements of residences and businesses, provided better access to the community, created less adverse travel, and had lower right-of-way requirements.

Improvement concepts such as additional turn lanes, signals, and access control for the upgraded expressway were studied at each existing intersection. Recommendations for access controls on intersection streets were made based on current and projected uses of property located at the intersections, impacts to business operations, and evaluation of accident data.

Several public meetings were held to present the two alternates to the city council, general public, and business owners. The majority of the public comments expressed support for the expressway alternate. The City Council of Monmouth also supported the expressway alternate.

A comparison of the freeway and upgraded expressway concepts has been made as summarized in the following table:

Table 3-2 Comparison of Freeway and Expressway Concepts for Monmouth

Issues	Freeway	Expressway
U.S. Route 34 Traffic Flow	Free Flow 90 to 100 km/hr (55 to 65 mph)	Signalized Intersections 70 to 80 km/hr (45 to 50 mph)
Crossing U.S. Route 34	Free Flow at Broadway, Euclid/Clinton, Harlem, G St., Main, 6th St., 11th St., Illinois 164	Stop Signs at 87th St., Illinois 164 Signals at Broadway, Harlem, G St. (if added), Main, 6th St., 11th St.
Accident Potential on U.S. Route 34	Greatly Reduced	Somewhat Reduced
Adverse Travel	11th Ave., Harlem Ave., G St. (north), 6th St., 11th St., 87th St.	11th Ave.
Access	Limited to 4 Points, Improved Access for U.S. Route 67 and Illinois 164 at U.S. Route 34	Up to 8 Points No Improvements for U.S. Route 67 (North) and Illinois 164 at U.S. Route 34
Right-of-Way Required	Larger Areas at the Interchanges	Minimal
Displacements		
Residential	5-7	None
Commercial	6-14	None
Impacts to Business Access	At Main, 6th St., and 11th St.	At Broadway, Main and 6th St.
Impacts to Residential Access	At Harlem, G St., 11th St., and 11th Ave.	At 11th Ave.
Construction Phasing	More Difficult Due to Construction of Overpass Structures	Easily Phased Construction
Number of Potential Section 4(f) Involvements	4 (Citizens Lake, historic house, 2 athletic fields)	None
Cost	Higher Cost	Lower Cost

The freeway concept was recommended for elimination due to the higher number of displacements, higher cost, greater right-of-way requirements, access limitations, potential Section 4(f) involvement, and more adverse travel. There was considerable support within the project corridor for the improvement of U.S. Route 34 to be in the form of a four-lane expressway rather than a freeway facility. In summary, there were concerns that the access restrictions inherent in a freeway system would adversely impact (1) farming operations (ability to move farming equipment from one side of the facility to the other), and (2) businesses within the Monmouth and Biggsville areas. The upgraded expressway concept was carried forward for further study.

3.3 Development of Preliminary Project Constraints

In order to understand the project corridor and the potential effects of study alternative development, effort was expended in the early phases of the location study process to identify and characterize the various constraints within the project area. Concurrent efforts of constraints identification and build alternate development occurred based upon coarse engineering feasibility considerations and project transportation objectives. Constraints considered during this process entailed those that represented environmental concerns, as well as those that possessed implications to engineering feasibility.

Examples of environmental constraints considered early in the development of the project build alternates included the following:

- wetlands;
- archaeological sites;
- historical sites;
- surface water resources;
- special geology and geological expressions;
- documented rare or unique ecological communities;
- potential or known hazardous waste sites;
- residential and commercial areas;
- forested/wooded communities and hedgerows;
- agricultural land;
- farm severances; and
- remnant farm parcels.

Similarly, constraints were also identified that could potentially affect engineering feasibility and the efficiency of the transportation system. Examples of such considerations included

- topography;
- current and projected capacity of existing U.S. route 34 (i.e., LOS);
- accident patterns;
- existing roadway deficiencies (inadequate clear zones and shoulder widths, sharp curves, steep grades, inadequate sight distance);
- existing infrastructure (roads, pipelines, railroad, transmission lines);
- adverse travel;
- road closures;
- impact to existing bridges; and
- geometric design criteria.

Constraint information was developed by acquiring and consolidating information from a variety of sources including IDOT, other state agencies (i.e., IDNR, IDOA), federal agencies (i.e., NRCS,

USEPA, USGS), public input, and field reconnaissance. Additionally, a historic architectural survey was conducted along existing U.S. Route 34 during the early phase of the location study in order to identify those structures that may be eligible for listing on the NRHP. The results of that survey and a preliminary investigation of structures within other areas of the corridor were integrated into the project area base map and considered during the development and refinement of preliminary study alternates.

3.4 Project Alternatives

A number of project alternatives were considered in order to address the current and future transportation needs of the U.S. Route 34 corridor. Alternatives considered include

- No Action;
- Mass Transit;
- Transportation System Management (TSM);
- Upgrade of Existing Facility; and
- Build Alternates on New or Partial-New Location.

3.4.1 No Action Alternative

The No Action alternative is an alternative required for analysis under the National Environmental Policy Act (NEPA) and associated FHWA guidelines. This alternative provides a benchmark for the measurement of impacts associated with the build alternates and, therefore, provides a basis to compare the effects of an action (i.e., the preferred alternative) relative to effects that could transpire if the action did not occur. Under this alternative, no improvements would be made to the existing roadway system to accommodate projected increases in traffic. No major construction would be anticipated in the No Action alternative. The only activities anticipated would be the normal maintenance of existing U.S. Route 34.

There would be no direct environmental impacts associated with the No Action alternative. However, this alternative would not increase capacity, improve access, reduce congestion, increase safety, address safety concerns at the high accident locations in Monmouth, improve deteriorating pavements, or improve route contiguity. Consequently, this alternative does not satisfy the objectives of the project Purpose and Need.

3.4.2 Mass Transit

The examination of this alternative was preliminarily examined early in the alternative development and evaluation processes. The concept of mass transit was investigated to evaluate the feasibility of a mass transit system to meet the transportation demands within the project corridor. No mass transit systems operate between, or within, the project termini. Burlington-Northern does operate a rail line that transverses the project corridor. Rail traffic is predominantly freight oriented, with some through traffic on Amtrak. There are no documented plans by the local planning organizations or the regional planning agency to implement a mass transit system in the foreseeable future. The mass transit alternative was eliminated from further consideration as it does not satisfy the project Purpose and Need.

3.4.3 Transportation System Management

TSM actions, such as signal phasing and rerouting of traffic along the existing roadway system, were also eliminated as a stand-alone alternative because it failed to adequately address the objectives of the project Purpose and Need (i.e., this approach would not relieve congestion on existing U.S. Route 34, improve route continuity, etc.). However, pertinent aspects of this alternative will contribute to an increased efficiency of the local and regional transportation system in the urbanized area of Monmouth. Consequently, TSM improvements are being proposed as components of the preferred alternative. Those TSM elements included in the preferred alternative include turning lanes, improved access, signalization, and traffic signal modifications (see Sections 3.2.4 and 3.7).

Intelligent Transit Systems (ITS) can include sophisticated monitoring sensors, computers, and advanced communication networks that share information to improve traffic mobility and make traffic safer. Due to the rural nature of the study area, ITS was not considered a viable standalone option for the proposed project.

3.4.4 Upgrade of Existing Facility

Improvement of the existing facility between Carman Road and U.S. Route 67 was also evaluated. This alternative would consist of sustaining a two-lane facility through the design year 2025. A capacity analysis, with traffic projected to the year 2005 and year 2025, concluded that an improved two-lane facility would not efficiently carry projected traffic over much of the project corridor, with design year volumes falling to LOS C and D.

Consequently, it was determined that an improved two-lane highway would not meet the project Purpose and Need to improve system capacity, system continuity and travel safety, and was eliminated from further study.

3.4.5 Build Alternates on New or Partial New Location

Numerous build alternates were developed and evaluated for an improved four-lane expressway facility between Carman Road and U.S. Route 67. These alternates involved alignments on new and partial new location. A rigorous evaluation process was conducted which examined the viability of study alternates relative to the potential for exhibiting fatal flaws. The initial "fatal flaw" analysis included a precursory examination for the potential of impacting known and potential cultural resources, threatened and endangered species, recreational properties, wetlands, and known or suspected, special waste sites. Other elements of evaluation included the crossing of areas with severe topography, the crossing of surface water bodies, and the severance of agricultural properties.

3.5 Development of Preliminary Study Alternates

3.5.1 Alignment Band Development/Determination of Alternate Evaluation Template

In order to provide a thorough examination of preliminary study alternates relative to the social, economic, and physical landscape, and the stated project goals and objectives, the project corridor was divided into six sections (Figure 3-3). The considerations used in determining endpoints for these sections involved topography, logical geometric lengths and curvatures, and existing roadway locations.

The use of sections within the project corridor allowed the full examination of all practicable and reasonable alternates within distinct geographical locations. Alternate alignment bands were compared

- relative to the potential for achieving the project Purpose and Need, while minimizing adverse environmental impacts;
- relative to each other within each section; and
- relative to the efficiency of connection to other alignments in adjacent sections.

The development of preliminary study alternates was undertaken by integrating and assimilating environmental and engineering information for broad bands. Widths initially consisted of broad bands of 120 m (394 ft) to allow for a greater understanding of local constraints. Over time, alternates with widths of 100 m (328 ft) were developed within these bands, which represented refinements based upon constraints data, engineering feasibility, and transportation goals. The narrowed bands, or alternates, were then analyzed in the context of project Purpose and Need, traffic projections, O&D data, access issues, and traffic composition and movement patterns. Upon achieving a greater understanding of the environmental and engineering constraints, the preliminary alternates were later adjusted to avoid or reduce environmental impacts and improve horizontal or vertical geometry.

3.5.2 Determination of Evaluation Criteria

The next phase of alternate development consisted of the quantification of information along each alternate within each section. This was then used as a basis for evaluating alternatives within the sections. Thirteen preliminary study alternates were developed within the five project area sections west of U.S. Route 67 and analyzed relative to a set of evaluation criteria. The sixth section included the Monmouth area. The specific evaluation criteria used were selected based upon the review of project area information, input from the resource and regulatory agencies, input from the public, and the requirements of NEPA (i.e., a multi-disciplinary consideration of impacts to the human and natural environments). Quantitative data were calculated for each section and used to reflect the potential magnitude of impact associated with each alignment.

Preliminary evaluation criteria used to evaluate each of the section alternative alignments included

- total length;
- number of interchanges required;
- number of at-grade crossings;
- number of road closures;
- number of new or reconstructed bridges/number of drainage and stream crossings;
- number of bridges for highway crossings;
- number of residential displacements;
- number of commercial displacements;
- total right-of-way required;
- total existing right-of-way utilized;
- length of diagonal severance and number of parcels crossed and landowners affected;
- length of severance and number of parcels crossed and landowners affected;
- number of potentially historic structures affected;
- area of agricultural land impacted;
- number of public/semi-public areas impacted;
- area of wetland impacted;
- area of forestland impacted;

- area of floodplain impacted;
- number of permanent streams crossed;
- number of intermittent streams crossed; and
- number of archaeological sites crossed.

3.5.3 Evaluation of Preliminary Study Alternates (Phase I)

The project Purpose and Need, justification for facility type, and the preliminary alternate development and evaluation process (i.e., development of preliminary study alternates, determination of evaluation criteria, and quantitative comparison and evaluation of preliminary study alternates) were presented at the first NEPA/404 merger meeting in September 1997. This process ultimately culminated in the elimination of some preliminary study alternates.

In summary, alternate alignments within each section were eliminated from further consideration if they were determined to have relatively high impacts to environmental resources and/or did not provide the level of efficiency to meet the transportation objectives of the project. Some alternates in the sections that did not meet the above criteria were retained if they were necessary to provide continuity with adjacent sections, or if further investigations were required.

The following provides a summary of the preliminary alternate evaluation process within each of the five corridor sections between Carman Road and U.S. Route 67, and Section 6 in the Monmouth area (Figure 3-4).

3.5.3.1 Section 1

Section 1 extends from Carman Road to immediately east of TR66 (Figure 3-5). This area is largely characterized by open agricultural land with scattered residential development, primarily occurring in the vicinity of existing U.S. Route 34. Thirteen preliminary study alternates were developed in this section of the project corridor.

Alternates Recommended to be Retained: Through the course of impact identification and preliminary alternate evaluation, six alternates, 1B, 1E, 1F, 1H, 1I and 1M, were recommended to be carried forward for further consideration as these alternates had overall less impacts to floodplains, agricultural land and mapped wetlands when compared to other alternates. One of the alternates in this section (1E), which was quantified as incurring relatively high environmental impacts, was retained until further investigation of cultural resources along the bluff line north of TR66 could be completed.

Alternates Recommended to be Eliminated: The alternates eliminated (1A, 1C, 1D, 1G, 1J, 1K, and 1L) represented alignments that incurred relatively high impacts to floodplains, agricultural land, and mapped wetlands; crossed a greater number of streams and drainages; caused the creation of a greater number of diagonal severances and residential displacements; and required longer total lengths and right-of-way (Table 3-3). Potential geometric constraints were identified in maintaining appropriate grades while crossing CH15 and the Burlington Northern railroad, and traversing a drainage district channel in the near vicinity. Other alternates (1D, 1G) were also eliminated, in part, due to the absence of logical and practicable connections to alternates in sections to the east.

Table 3-3. Summary of Potential Impacts Associated with Each U.S. Route 34 Preliminary Study Alternate (Phase I), Section 1

Resource Category	Study Alternatives												
	1A	1B	1C	1D	1E	1F	1G	1H	1I	1J	1K	1L	1M
Traffic and Transportation													
Total Length, km	8.86	9.50	8.41	8.03	9.33	8.45	8.14	8.58	9.57	9.12	8.82	9.22	9.25
No. of Interchanges	1	1	2	2	1	2	2	2	1	1	1	1	1
No. of At-grade Crossings	1	8	2	5	5	6	5	5	7	7	3	6	6
No. of Roads Closed	1	1	0	1	1	1	0	0	2	1	0	2	0
No. of Bridges, Drainage / Stream Crossings, New	6	4	6	4	6	2	6	4	4	4	6	4	6
No. of Bridges, Highway Crossings *	0	0	0	0	0	0	0	0	0	0	0	0	0
Socioeconomic/Land Use													
No. of Residential Displacements	1	6	2	6	2	6	2	4	6	6	1	6	2
No. of Commercial Displacements	1	1	1	1	1	1	1	1	1	1	1	1	1
Total Right-of-Way, ha	81.5	87.3	77.4	73.9	85.8	77.8	74.9	78.9	88.0	83.9	81.2	84.8	85.1
Existing Right-of-Way Utilized, ha	1.1	10.3	1.2	4.3	7.0	4.3	4.8	4.5	8.0	5.4	3.7	4.5	9.3
Length of Diagonal Severances, km (No. parcels)†	3.2 (6)	1.6 (5)	4.7 (7)	2.0 (5)	4.0 (7)	2.9 (8)	2.4 (5)	3.9 (7)	2.2 (6)	4.6 (8)	3.1 (6)	4.8(11)	3.3 (6)
Length of Severances, km (No. parcels)†	1.7 (3)	0 (0)	1.0 (2)	.09 (1)	1.0 (1)	1.0 (1)	1.0 (2)	1.0 (2)	0 (0)	0(0)	0.8 (1)	0 (0)	0 (0)
Area of Agricultural Land, ha	75.94	72.28	72.06	64.95	73.66	67.65	65.70	69.35	74.01	73.30	73.85	74.82	71.93
Number of Public/Semi-Public Areas Impacted	0	0	0	0	0	0	0	0	0	0	0	0	0
Natural Environment													
Area of Wetland Impact, ha	3.86	0	1.72	0.00	0	0.07	0	0.07	0	0	3.90	0	0
Area of Forest Land Impact, ha	1.10	4.40	1.71	1.86	3.49	1.43	1.91	1.54	4.53	1.57	0.81	1.62	3.36
Area of Floodplains Impact, ha	68.54	43.65	55.31	37.85	57.71	37.85	45.81	55.57	43.65	37.85	67.44	37.85	57.71
No. of Permanent Streams Crossed	2	2	3	0	2	1	0	1	2	2	2	2	2
No. of Intermittent Streams Crossed**	1	2	0	2	1	3	2	1	3	3	1	3	1

Alternate recommended for elimination from further consideration.

* Number of bridges does not include those associated with interchanges.

† The two severance values shown, combined, provide total severance length.

** Streams/drainages have been identified using USGS mapping and limited field reconnaissance. Mapped waterways in the project area are frequently intermittent drainages within agricultural fields, and of smaller watershed areas.

Source: Harding ESE, 2001.

3.5.3.2 Section 2

Section 2 is immediately east of TR66 to midway between TR111 and TR94 (Figure 3-6). The predominant characteristic in this section was related to the landform change from a low-lying level landscape roughly west of the Bogus Hollow area to a relatively steep bluff, followed by rolling terrain to the east. Developed land is low in density and scattered. Six preliminary alternates were developed in this section of the project corridor.

Alternates Recommended to be Retained: Through the course of impact identification and preliminary alternate evaluation, three alternates, 2B, 2C, and 2E, were recommended to be carried forward for further consideration due to relatively less impacts to agricultural land and wetlands (Table 3-4). Additionally, alternate 2B maximizes the use of existing right-of-way.

Alternates Recommended to be Eliminated: Generally, the three alternates (2D, 2F, and 2G) were eliminated due to geometric and access issues, and potential impacts to agricultural and forested land (see Table 3-4). The transition of landscape provided some issues of geometric concern, especially in the vicinity of Illinois Route 164, where the maintenance of access was potentially going to require an interchange. The existing bridge and stream crossing further complicated design constraint issues.

3.5.3.3 Section 3

Section 3 extends through Biggsville to due west of CH2 (Figure 3-7). Biggsville is the community closest in proximity to existing U.S. Route 34. Residences and businesses are along both sides of the existing road, however, residential development is located primarily on the north side. Nine preliminary study alternates were developed and evaluated in this section.

Alternates Recommended to be Retained: Through the course of impact identification and preliminary alternate evaluation, alternates 3C, 3E, 3G, 3H, 3I, were recommended to be carried forward for further consideration due to relatively fewer residential and commercial displacements and comparatively reduced environmental impacts.

Alternates Recommended to be Eliminated: Alternates 3B, 3D, 3J, and 3K were recommended for elimination since they did not meet the transportation objectives of the project, while minimizing adverse impacts to the Biggsville community. Alternate alignments included through Biggsville (3B and 3J) and near and far bypass combinations. The most southern alternate (3D) was eliminated because it did not meet a project goal of serving local communities. It was determined that local traffic would likely continue to use existing U.S. Route 34. Alternate 3D also had relatively high impacts to agricultural land and forested area, and required the greatest number of stream crossings (Table 3-5).

Two reduced width alternates (3B and 3J) were studied through Biggsville, each holding either the north or south rights-of-way. Cross sections of the alternates were modified and examined for potential for design speed, access, safety, impacts to the HENCO Golf Course and a historic stone house, and residential and business displacements (see Table 3-5). The combination of greater impacts to residences and businesses, greater number of access points, difficulties with constructability, greater potential for noise impacts, and a reduced design speed led to the elimination of both 3B and 3J. The other alternates eliminated from further consideration did not serve local traffic and the local community (i.e., 3D), and impacted two properties with historic structures (i.e., 3K).

able 3-4. Summary of Potential Impacts Associated with Each U.S. Route 34 Preliminary Study Alternate (Phase I), Section 2

Resource Category	Study Alternates					
	2B	2C	2D	2E	2F	2G
Traffic and Transportation						
Total Length, km	3.56	3.60	3.68	3.50	3.47	3.85
No. of Interchanges	0	0	0	1	0	0
No. of At-grade Crossings	3	1	2	1	1	2
No. of Roads Closed	0	0	0	0	0	0
No. of Bridges, Drainage/Stream Crossings, New	0	0	2	0	0	2
No. of Bridges, Highway Crossings*	0	0	0	0	0	0
Socioeconomic/Land Use						
No. of Residential Displacements	1	1	0	0	0	1
No. of Commercial Displacements	0	0	0	0	0	0
Total Right-of-Way, ha	32.7	33.1	33.8	32.2	31.9	35.4
Existing Right-of-Way Utilized, ha	9.9	0	0	3.2	0	0
Length of Diagonal Severances, km (No. parcels)†	0 (0)	1.5 (3)	1.5 (3)	0 (0)	0 (0)	2.6 (6)
Length of Severances, km (No. parcels)†	0 (0)	0 (0)	0.4 (1)	1.6(3)	0.4 (1)	0 (0)
Area of Agricultural Land, ha	14.32	24.60	26.76	18.72	26.03	25.66
No. of Public/Semi-Public Areas Impacted	0	0	0	0	0	0
Natural Environment						
Area of Wetland Impact, ha	0.06	0.09	0.00	0.48	0.09	0.00
Area of Forest Land Impact, ha	7.26	5.82	6.50	8.20	4.70	7.64
Area of Floodplains Impact, ha	0	0	0	0	0	0
No. of Permanent Streams Crossed	0	0	1	0	0	1
No. of Intermittent Streams Crossed**	0	0	1	1	1	1

Alternate recommended for elimination from further consideration.

* Number of bridges does not include those associated with interchanges.

† The two severance values shown, combined, provide total severance length.

** Streams/drainages have been identified using USGS mapping and limited field reconnaissance. Mapped waterways in the project area are frequently intermittent drainages within agricultural fields, and of smaller watershed areas.

Source: Harding ESE, 2001.

Table 3-5. Summary of Potential Impacts Associated with Each U.S. Route 34 Preliminary Study Alternate (Phase I), Section 3

Resource Category	Study Alternate								
	3B	3C	3D	3E	3G	3H	3I	3J	3K
Traffic and Transportation									
Total Length, km	7.63	7.71	7.67	7.78	7.93	7.82	7.83	7.63	7.71
No. of Interchanges	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
No. of At-grade Crossings	13	5	5	8	6	5	6	13	9
No. of Roads Closed	1	3	2	1	2	2	3	1	0.00
No. of Bridges, Drainage/Stream Crossings, New	4	6	2	2	2	6	2	4	4
No. of Bridges, Highway Crossings*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Socioeconomic/Land Use									
No. of Residential Displacements	9	0.00	2	6	1	1	0.00	20	7
No. of Commercial Displacements	5	0.00	0.00	2	1	1	0.00	5	2
Total Right-of-Way, ha	62.9	70.9	70.6	71.6	73.0	71.8	72.0	63.0	67.5
Existing Right-of-Way Utilized, ha	17.7	0.7	6.4	10.1	2.1	0.8	2.0	17.7	11.8
Length of Diagonal Severances, km (No. parcels)†	0 (0)	1.6 (4)	.4 (2)	4.2 (8)	4.4 (8)	1.7 (3)	4.0 (9)	0 (0)	1.4 (3)
Length of Severances, km (No. parcels)†	0 (0)	1.5 (4)	1.3 (3)	0 (0)	0.8 (2)	1.1 (3)	0.8 (2)	0 (0)	0 (0)
Area of Agricultural Land, ha	40.14	61.38	60.65	54.19	66.42	65.54	63.25	31.27	39.45
No. of Public/Semi-Public Areas Impacted	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1	0.00
Natural Environment									
Area of Wetland Impact, ha	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Area of Forest Land Impact, ha	3.70	5.28	3.64	2.56	2.27	5.41	2.15	4.69	3.32
Area of Floodplains Impact, ha	1.80	6.94	1.68	2.86	2.84	6.94	2.84	2.13	3.30
No. of Permanent Streams Crossed	2	3	1	1	1	3	1	2	2
No. of Intermittent Streams Crossed**	6	4	9	6	3	4	3	6	6

Alternate recommended for elimination from further consideration.

* Number of bridges does not include those associated with interchanges.

† The two severance values shown, combined, provide total severance length.

** Streams/drainages have been identified using USGS mapping and limited field reconnaissance. Mapped waterways in the project area are frequently intermittent drainages within agricultural fields, and of smaller watershed areas.

Source: Harding ESE, 2001.

3.5.3.4 Section 4

Section 4 is between Biggsville and Kirkwood; west of CH2 to TR26 (Figure 3-8). The landscape through this section is, again, predominantly open agricultural land, with some scattered residential development along the existing road. A hog farm operation also occurs to the south of the existing road in this section. Three preliminary study alternates were developed in this section of the project corridor.

Alternates Recommended to be Retained: Through the course of impact identification and preliminary alternate evaluation, two alternates 4B and 4C, were recommended to be carried forward for further consideration due to relatively less impacts to wetlands, forested land, and floodplains.

Alternates Recommended to be Eliminated: Alternate 4D was eliminated because it was the longest of the three alternates in this section and required the greatest area of right-of-way; utilized the least area of existing right-of-way; created diagonal severances; and impacted the greatest area of floodplains, forested land, and wetlands (Table 3-6). Due to the distance from existing U.S. Route 34, it was determined to be limited in meeting local traffic needs.

3.5.3.5 Section 5

Section 5 is from TR26 south of Kirkwood to U.S. Route 67 (Figure 3-9). This section is similar to Section 4, where land is predominantly utilized for row and seed crop production. Residences and farmsteads occur along existing U.S. Route 34 and along section roads. Eight preliminary study alternates were developed in order to allow a full examination of the connection with U.S. Route 67. The preliminary alternates had three interchange options at U.S. Route 67, including the existing interchange.

Alternates Recommended to be Retained: Through the course of impact identification and preliminary alternate evaluation, six alternates (5A, 5B, 5C, 5E, 5G, and 5H) were recommended to be carried forward for further consideration as these alternates had relatively overall low impacts to natural resources including wetlands.

Alternates Recommended to be Eliminated: The evaluation of the preliminary alternates in this section resulted in the elimination of two alternates (5D and 5F; Table 3-7). These alternates shared a common connection to U.S. Route 67, south of the existing U.S. Routes 34/67 interchange. Both alternates were eliminated, in part, due to the higher number of farm properties impacted, the greater length of diagonal severances, and the higher number of potential displacement of farm buildings.

3.5.3.6 Section 6

Section 6 begins north of the existing U.S. Route 34/67 interchange and ends on the east side of Monmouth. Preliminary alternatives were developed to the south and east of Monmouth. Those preliminary alternatives that were farther south and east of Monmouth were eliminated early in the evaluation process due to comparatively higher environmental impacts, the requirements of greater lengths of roadway and the construction of new interchanges, and the determination of reduced facility efficiency (see Figure 3-4). A "close" southeast bypass was retained for further evaluation as a basis for comparison to the existing Route 67/34 facility that runs northeast, and adjacent to, Monmouth. The southeast bypass was eliminated as a result of the decision to recommend retaining the existing northeast bypass of Monmouth (Figure 3-10). The subsequent alternatives that were evaluated in Section 6 involved the consideration of upgrading the existing alignment either as a freeway or as an improved expressway (see Section 3.2.4).

Table 3-6. Summary of Potential Impacts Associated with Each U.S.Route 34 Preliminary Study Alternate (Phase I), Section 4

Resource Category	Study Alternate		
	4B	4C	4D
Traffic and Transportation			
Total Length, km	6.51	6.51	6.70
No. of Interchanges	0	0	0
No. of At-grade Crossings	5	4	4
No. of Roads Closed	0	0	0
No. of Bridges, Drainage/Stream Crossings, New	0	0	0
No. of Bridges, Highway Crossings*	0	0	0
Socioeconomic/Land Use			
No. of Residential Displacements	6	0	1
No. of Commercial Displacements	0	0	0
Total Right-of-Way, ha	59.9	59.9	61.7
Existing Right-of-Way Utilized, ha	16.4	0	2.6
Length of Diagonal Severances, km (No. parcels)†	0 (0)	0 (0)	1.9 (3)
Length of Severances, km (No. parcels)†	0 (0)	2.0 (3)	0.7 (1)
Area of Agricultural Land, ha	43.85	57.74	55.22
No. of Public/Semi-Public Areas Impacted	0.00	0.00	0.00
Natural Environment			
Area of Wetland Impact, ha	0.07	0.02	0.38
Area of Forest Land Impact, ha	0.63	1.00	3.43
Area of Floodplains Impact, ha	0.00	0.00	8.26
No. of Permanent Streams Crossed	0.00	0.00	0.00
No. of Intermittent Streams Crossed**	2	4	8

Alternate recommended for elimination from further consideration.

* Number of bridges does not include those associated with interchanges.

† The two severance values shown, combined, provide total severance length.

** Streams/drainages have been identified using USGS mapping and limited field reconnaissance. Mapped waterways in the project area are frequently intermittent drainages within agricultural fields, and of smaller watershed areas.

Source: Harding ESE, 2001.

Table 3-7. Summary of Potential Impacts Associated with Each U.S. Route 34 Preliminary Study Alternate (Phase I), Section 5

Resource Category	Study Alternate							
	5A	5B	5C	5D	5E	5F	5G	5H
Traffic and Transportation								
Total Length, km	10.50	10.82	10.28	9.36	9.70	8.84	11.01	11.40
No. of Interchanges*	0	0	1	1	1	1	0	0
No. of At-grade Crossings	4	6	5	5	4	4	5	7
No. of Roads Closed	2	2	2	3	2	3	2	2
No. of Bridges, Drainage/Stream Crossings, New (Reconstructed)	0	0	0	0	0	0	0	0
No. of Bridges, Highway Crossings†	0	0	0	0	0	0	0	0
Socioeconomic/Land Use								
No. of Residential Displacements	1	5	1	2	0	1	2	6
No. of Commercial Displacements	0	0	1	1	0	0	1	1
Total Right-of-Way, ha	96.6	99.5	94.6	86.1	89.3	81.3	101.3	104.9
Existing Right-of-Way Utilized, ha	19.4	36.6	4.5	9.8	11.2	17.0	12.6	29.8
Length of Diagonal Severances, km (No. parcels)**	5.8 (11)	0.9 (1)	3.1 (7)	3.4 (7)	1.5 (3)	2.1 (4)	7.4 (15)	2.9 (5)
Length of Severances, km (No. parcels)**	0 (0)	0 (0)	1.7 (3)	0 (0)	1.7 (3)	0 (0)	0 (0)	0 (0)
Area of Agricultural Land, ha	86.47	77.60	86.93	72.26	83.14	68.70	90.25	81.39
No. of Public/Semi-Public Areas Impacted	0	0	0	0	0	0	0	0
Natural Environment								
Area of Wetland Impact, ha	0	0	0	0.19	0	0	0	0
Area of Forest Land Impact, ha	0.52	0.52	1.84	0.70	1.06	0.77	1.30	1.30
Area of Floodplains Impact, ha	0	0	0	0	0	0	0	0
No. of Permanent Streams Crossed	0	0	0	0	0	0	0	0
No. of Intermittent Streams Crossed††	6	6	13	11	12	10	7	7

Alternate recommended for elimination from further consideration.

Reconstruction of the existing U.S. Route 34/67 interchange may be required.

† Number of bridges does not include those associated with interchanges.

** The two severance values shown, combined, provide total severance length.

†† Streams/drainages have been identified using USGS mapping and limited field reconnaissance. Mapped waterways in the project area are frequently intermittent drainages within agricultural fields, and of smaller watershed areas.

Source: Harding ESE, 2001.

The following discussion provides analysis which led to the elimination of the southeast bypass (also some discussion available in Section 3.2.3).

Separate traffic studies of the Monmouth area were conducted, including an O&D survey. Survey results included the following:

- Almost half the vehicles traveling through the area make a stop in Monmouth;
- Given a new southeast alignment, with an interchange at the southeast side of Monmouth, some 45 percent of the traffic would use the new alignment or 4,500 vehicles (1995 ADT); and
- Given a new southeast alignment, *without* an interchange at the southeast side of Monmouth, some 30 percent of the traffic would use the new alignment or 3,200 vehicles (1995 ADT).

Access via interchanges was considered at Illinois Route 164, Broadway, Cameron Road south of the tracks, and at Main Street South. An interchange at East Broadway was determined to be not acceptable because additional traffic would be generated through town and would require upgrading Broadway which could impact existing residences, parking, and potentially historic residences. If an interchange was located at Broadway for an east bypass, it would not be feasible to locate an interchange at existing U.S. Route 34 due to the distance being less than 1.6 km (1 mi). If existing U.S. Route 34 was not connected to an interchange, access for traffic to the northern side of Monmouth would be reduced. Since Main Street would intersect the southern leg of the bypass less than 0.8 km (0.5 mi) east of U.S. Route 67, an interchange could not be constructed for Main Street because it would be too close to the interchange at U.S. Route 67. The only reasonable interchange location was determined to be at Cameron Road near the southeastern corner of Monmouth. Service roads would be required to connect the existing street system to the interchange. Access to roads would be required to connect the existing street system to the interchange. Access to Monmouth from a south and east bypass would require all new right-of-way and serve less than half of the U.S. Route 34 traffic around the Monmouth area. Additionally, the existing interchange at U.S. Route 67 would need to be completely reconstructed to accommodate the new traffic patterns.

The recommendation was made to drop a new southeast bypass from further consideration . Reasons for this recommendation are:

- Only 30 to 45 percent of existing traffic would use a southeast bypass;
- A southeast bypass does not address the current accident issues along the northwest bypass;
- It would be less costly to upgrade and maintain the existing northwest route than to construct a new southeast bypass and maintain both the new bypass and the existing north and west route; and
- The existing northwest expressway can be upgraded as a freeway or an expressway to serve current and future traffic.

3.5.4 Refinement of Evaluation Criteria

Analysis of the study alternates became more in-depth as the alternate alignments were modified to minimize impacts to environmental resources, commercial/residential displacements, and disruption to current land uses. In addition, detailed consideration accounted for locational terrain characteristics (i.e., topography, stream crossings, slope and gradient, etc.), and appropriate access. To more accurately determine engineering considerations and the associated impacts, efforts were made to develop reasonable (generalized) rights-of-way for each study alternate. The typical right-of-way widths for the alternates in relatively level terrain was approximated at 80.7 m (265 ft). However, in areas of more severe grades and stream crossings, rights-of-way were expanded to more accurately reflect potential environmental impacts based upon potential design requirements.

Agriculture is the predominant social and economic attribute within the project corridor. A primary refinement to the evaluation criteria involved the introduction of additional agricultural impact indicators. Agricultural soils are also an important natural resource due to their high productivity. The following agricultural impact criteria were integrated into the alternate evaluation process:

- number of farm residential displacements;
- number of agriculture business displacements;
- area of productive cropland/pasture;
- area of other agricultural land (i.e., farmstead area);
- area of woodlands;
- number of owners affected;
- number of operators affected;
- number of severed farm operations (lateral and diagonal severances by tract); and
- number of otherwise affected farm operations (non-severance impacts by tract).

Other additional evaluation indicators included the number of businesses/residents with access impacts and utility interference impacts. For clarity, the determination between major and minor utility impacts depended on the size of the service area affected and the number of people potentially affected, cost of relocation, and the size and complexity of the facility involved.

3.5.5 Evaluation of Preliminary Study Alternates (Phase II)

The process of reorganizing the project area for Phase II (i.e., six sections to four sections), the refinement of evaluation criteria, the quantitative comparison of impacts related to the remaining preliminary study alternates, and evaluation of the preliminary study alternates were presented during the second NEPA/404 merger meeting in September 1998. The result of the meeting was consensus on the determination of those alternates that would be carried forward as final study alternates.

The number of preliminary study alternates was reduced through the examination of potential impacts, engineering considerations, and the projected ability to meet the stated transportation goals and objectives outlined in the project Purpose and Need. Due to the lower number of preliminary alternates, the number of project sections was reduced from five to three between Carman Road and U.S. Route 67. These sections were subsequently labeled Sections I through III (see Figure 3-10) and were developed in the following manner:

- Section I--Combination of previous Sections 1 and 2,
- Section II--Combination of previous Sections 3 and 4, and
- Section III--The same as previous Section 5.

For continuity and clarity, the sectional preliminary alternate labels (i.e., 1M, 1B) were not changed, but used in combination (i.e., previous Section 1 Alternates 1B and 2B were relabelled 1B2B in Section I). What has previously been labeled Section 6 during Phase I was relabelled Section IV, which maintained the same geographic limits in the Monmouth area.

Phase II of the preliminary evaluation process occurred after the refinement of evaluation criteria and the restructuring of the project corridor (i.e., change in section labels). The objective of this phase of alternate evaluation was to reduce the number of study alternates through more detailed analysis.

The result of this evaluation led to the selection of those alternates recommended to be carried forward as the Final Study Alternates. The following provides a summary of the rationale used in the selection process.

A multi-step approach was implemented:

- re-quantification of potential impacts of the section alternates, as refinements were made to each alternate to further practice avoidance and minimization of impacts, and typical rights-of-way were established;
- analysis of impacts and determination of the ability of each alternate to maximize the transportation objectives of the project;
- documentation of evaluation rationale for each alternate eliminated; and
- documentation of the inherent advantages and disadvantages of those alternates recommended to be carried forward as final study alternates.

3.5.5.1 Section I

Section I (Carman Road in Gulfport to TR111). Six study alternates remained in Section I: 1B2B, 1E2E, 1F2C, 1H2C, 1I2E, and 1M2B (Figure 3-11).

Recommendation: Alternate 1M2B was recommended to be carried forward for further consideration.

Alternate Elimination Steps:
Alternate 1F2C and Alternate 1H2C were eliminated (Tables 3-8 and 3-9) because they

- utilized the least amount of existing right-of-way;
- required an interchange in the vicinity of TR66 (1150E) at the base of the bluff line due to steepness of grade;
- required the upgrade of TR66 to state highway standards from the improved facility to existing U.S. Route 34;
- had the highest probability of impacts to burial mounds and other archaeological sites; and
- had the highest number of farm residential displacements.

Alternates 1E2E and 1I2E were recommended for elimination (see Tables 3-8 and 3-9) because they

- required the greatest amount of right-of-way
- required an additional interchange in the vicinity of Illinois 164 at the base of the bluff line due to steepness of grade;
- impacted INHS Botanical Site #3 (a grade C to C- sand hill prairie and potential habitat for the western hognose snake, a state threatened species);
- impacted the greatest area and greatest number of wetlands; and
- incurred the highest impacts to woodlands.

The two alternates that remained were Alternates 1M2B and 1B2B. With the exception of the portion of 1M2B to the west of existing U.S. Route 34, these two alternates were identical. Alternate 1M2B was located west of the existing diagonal in the floodplain, while Alternate 1B2B was located to the east of the existing route. When compared to each other, Alternate 1B2B (see Tables 3-8 and 3-9) was eliminated because it:

- required two more at-grade crossings;
- impacted an additional three farm owners;
- impacted an additional two farm operations;
- displaced an additional six residences; and
- conflicted with several township roads due to the location to the east of the existing route, which created access impacts to a high number of businesses/residences.

Table 3-8. Summary of Potential Impacts Associated with Each U.S. Route 34 Preliminary Study Alternate (Phase II), Section I

Previously Labeled Alternates Section 1	1B	1E	1F	1H	1I	1M
Previously Labeled Alternates Section 2	2B	2E	2C	2C	2E	2B
New Alternates Nomenclature	1B2B	1E2E	1F2C	1H2C	1I2E	1M2B
Traffic and Transportation						
No. of Interchanges	1	2	2	2	2	1
No. of At-grade Crossings	10	6	6	5	8	8
No. of Roads Closed	1	2	1	1	2	1
No. of Businesses/Residences with Access Impacted	23	4	4	1	22	5
Socioeconomic/Land Use/Natural Resources						
No. of Non-Farm Residential Displacements	7	1	2	2	7	1
No. of Farm Residential Displacements	4	3	7	5	3	4
No. of Non-Agricultural Business Displacements	1	1	1	1	1	1
No. of Agricultural Business Displacements	0	0	0	0	0	0
Total Right-of-Way, ac	284	294	275	270	298	290
Existing Right-of-Way Utilized, ac	65	34	20	18	39	61
Total Area of Wetland Impact, ac	0.68	1.91	0.18	0.18	1.91	0.85
Area of Floodplain Encroachment, ac	100	136	92	130	100	166
No. of Perennial Streams Crossed	2	2	1	1	2	2
No. of Intermittent Streams Crossed	3	2	4	4	3	2
Utility Interference (Minor; Major)	Major	Major	Major	Major	Major	Major
Agriculture						
Area of Productive Cropland/Pasture, ac	190	225	214	220	217	204
Area of Woodlands, ac	31	31	21	21	34	27
Area of Other Agricultural Land, ac	63	39	39	29	47	60
Number of Owners Affected	26	23	23	24	26	23
Number of Operators Affected	21	19	18	20	21	19
No. of Severed Farm Operations (by tract)	11	14	12	15	14	11
No. of Otherwise Affected Farm Operations (by tract)	13	7	8	7	9	10

Alternate recommended for elimination from further consideration.

Source: Harding ESE, 2001.

Table 3-9. Potential Wetland Impacts Associated with Each U.S. Route 34 Preliminary Study Alternate (Phase II), Section I

Alternates	INHS Site #	INHS Classification	Size (acres)	FQI Value	C Value Mean	Impact Area (acres)	Impact Area (% of total)	Total # Wetlands Impacted	Total Acres Impacted
1B2B	136	Pond	0.92	0.9	0.4	0.51	55	2	0.68
	137	Wet meadow/seep	0.20	12.3	3.1	0.17	85		
1E2E	100	Pond	0.88	5.4	1.7	0.42	48	4	1.91
	101	Wet meadow/seep	1.06	12.0	2.4	1.01	95		
	136	Pond	0.92	0.9	0.4	0.37	40		
	137	Wet meadow/seep	0.20	12.3	3.1	0.11	55		
1F2C	115	Wet meadow	0.12	2.6	1.0	0.12	100		
								2	0.18
	116	Wet meadow	0.13	6.1	1.7	0.06	46		
1H2C	115	Wet meadow	0.12	2.6	1.0	0.12	100		
								2	0.18
	116	Wet meadow	0.13	6.1	1.7	0.06	46		
1I2E	100	Pond	0.88	5.4	1.7	0.42	48		
								4	1.91
	101	Wet meadow/seep	1.06	12.0	2.4	1.01	95		
	136	Pond	0.92	0.9	0.4	0.37	40		
	137	Wet meadow/seep	0.20	12.3	3.1	0.11	55		
1M2B	95	Sedge meadow/seep	0.31	17.0	3.0	0.10	32		
								3	0.85
	136	Pond	0.92	0.9	0.4	0.56	61		
	137	Wet meadow/seep	0.20	12.3	3.1	0.19	95		

Alternate recommended for elimination from further consideration.

Source: Harding ESE, 2001.

A synopsis of the evaluation process indicated both the advantages and disadvantages (see Tables 3-8 and 3-9) of Alternate 1M2B. The advantages included

Alternate 1M2B

- requires one interchange;
- displaces the least number of non-farm residences and second least number of total residences;
- affects access for a lower number of businesses/residences;
- utilizes a high amount of existing right-of-way;
- affects a lower number of owners and operators; and
- severs a low number of farm operations by tract.

Identified disadvantages included

- relatively high number of at-grade crossings;
- impacts three wetland sites for a total of 0.85 acres;
- incurs the greatest area of floodplain encroachment;
- impacts INHS Botanical Site #3;
- affects a high amount of other agricultural land (i.e., farmstead property); and
- impacts a high number of otherwise affected farm operations.

3.5.5.2 Section II

Section II (through the Biggsville area to TR 26 at the west edge of Kirkwood) (see Figure 3-11). Five alternates remained in Section II: 3C4C, 3E4B, 3G4B, 3H4C, and 3I4B.

Recommendation: Alternates 3E4B and 3G4B were recommended for further analysis.

Alternate Elimination Steps:
Alternates 3I4B and 3C4C were no longer considered due to the elimination of connecting alignments in Section I. The potential impacts associated with each of these alternates are presented in Tables 3-10 and 3-11.

Alternate 3H4C was recommended for elimination as it did not compare favorably with the other alternates in Section II. Some of the impacts (see Tables 3-10 and 3-11) included

- utilized the greatest amount of total right-of-way;
- utilized only 3 acres of existing right-of-way;
- impacted the greatest area of productive farm ground;
- impacted the greatest area of woodlands;
- highest amount of floodplain encroachment; and
- provided only minor reduction in potential wetland impacts (0.16 ac) relative to those alternates with the greatest amount of potential impacts.

Table 3-10. Summary of Potential Impacts Associated with Each U.S. Route 34 Preliminary Study Alternate (Phase II), Section II

Previously Labeled Alternates Section 3	3C	3E	3G	3H	3I
Previously Labeled Alternates Section 4	4C	4B	4B	4C	4B
New Alternates Nomenclature	3C4C	3E4B	3G4B	3H4C	3I4B
Traffic and Transportation					
No. of Interchanges	0	0	0	0	0
No. of At-grade Crossings	8	13	11	8	11
No. of Roads Closed	3	1	3	3	3
No. of Businesses/Residences with Access Impacted	1	15	10	1	9
Socioeconomic/Land Use/Natural Resources					
No. of Non-Farm Residential Displacements	0	5	3	1	3
No. of Farm Residential Displacements	0	8	4	1	4
No. of Non-Agricultural Business Displacements	0	2	1	1	0
No. of Agricultural Business Displacements	0	0	0	0	0
	308	300	305	333	287
Existing Right-of-Way Utilized, ac	3	54	48	3	47
Total Area of Wetland Impact, ac	0.89	0.89	0.12	0.73	0.38
Area of Floodplain Encroachment, ac	16	8	8	29	8
No. of Perennial Streams Crossed	3	1	1	3	1
No. of Intermittent Streams Crossed	8	9	5	8	5
Utility Interference (Minor; Major)	Minor	Major	Major	Major	Major (4B)
Agriculture					
Area of Productive Cropland/Pasture, ac	278	231	254	302	232
Area of Woodlands, ac	15	8	7	22	7
Area of Other Agricultural Land, ac	14	60	44	9	48
Number of Owners Affected	36	31	31	35	33
Number of Operators Affected	27	23	23	26	25
No. of Severed Farm Operations (by tract)	11	8	11	10	13
No. of Otherwise Affected Farm Operations (by tract)	19	15	13	20	13

Alternate recommended for elimination from further consideration.

Source: Harding ESE, 2001.

Table 3-11. Potential Wetland Impacts Associated with Each U.S. Route 34 Preliminary study Alternate (Phase II), Section II

Alternates	INHS Site #	INHS Classification	Size (acres)	FQI Value	C Value Mean	Impact Area (acres)	Impact Area (% of total)	Total # Wetlands Impacted	Total Acres Impacted
3C4C	57	Wet shrubland	0.61	13.0	2.9	0.61	100	2	0.89
	75	Wet meadow	0.57	10.6	2.7	0.28	49		
3E4B	54	Pond/marsh	1.03	8.5	2.7	0.12	12	4	0.89
	60	Sedge meadow	0.59	8.9	2.0	0.36	61		
	63	Pond	4.61	11.3	2.7	0.26	6		
	66	Wet meadow	0.18	5.7	1.9	0.15	83		
3G4B	54	Pond/marsh	1.03	8.5	2.7	0.12	12	1	0.12
3H4C	48	Wet meadow	0.12	6.8	1.7	0.12	100	2	0.73
	57	Wet shrubland	0.61	13.0	2.9	0.61	100		
3I4B	54	Pond/marsh	1.03	8.5	2.7	0.12	12	2	0.38
	75	Pond/marsh	0.57	10.6	2.7	0.26	46		

Alternate recommended for elimination from further consideration.

Source: Harding ESE, 2001.

The advantages and disadvantages of the alternates recommended for further investigations are listed below.

Alternate 3E4B

Advantages (see Tables 3-10 and 3-11)

- lowest number of road closures;
- second lowest amount of total right-of-way;
- highest amount of existing right-of-way utilized;
- incurs a lower amount of floodplain encroachment;
- impacts the least amount of productive cropland;
- shares the lowest number of owners and operators affected with Alternate 3G4B; and
- lowest number of severed farm operations.

Disadvantages

- highest number of at-grade crossings;
- highest number of business/residence access impacts, and the highest number of residential (13) and business (2) displacements due to alignment use of a greater percentage of existing right-of-way;
- potential impacts to two historic properties;
- closer proximity to the Union School complex; and
- impact to a cellular telephone tower.

Alternate 3G4B

Advantages (see Tables 3-10 and 3-11)

- second highest amount of existing right-of-way utilized;
- shares the least amount of floodplain encroachment with alternate 3E4B;
- shares the lowest number of owners and operators affected with alternate 3E4B;
- impacts the least area of woodland;
- impacts the least area of wetlands;
- located south of Union School and avoids potential conflict with school traffic;
- provides a better location for a connection with Illinois Route 94/Illinois Route 116, with the ability to add an interchange if necessary; and
- crosses a lower number of perennial and intermittent streams.

Disadvantages

- second highest number of business/residential access impacts;
- second highest number of total displacements to Alternate 3E4B; and
- shares the second highest number of severed farm operations with Alternate 3C4C.

3.5.5.3 Section III

Section III is south of Kirkwood to U.S. Route 67 (see Figure 3-11). Six alternates were considered: 5A, 5B, 5C, 5E, 5G, and 5H. The alternates were grouped into two sets of three alignments. One group began along the existing U.S. Route 34. The other group began approximately ½ mi south of existing U.S. Route 34.

Recommendation: Alternates 5B and 5E were recommended to be carried forward as final study alternates.

Alternate Elimination Steps:
Alternates 5G, 5H, and 5C were dropped from further consideration principally because the connecting alignments in Section II were eliminated. Additionally, these alternates do not significantly reduce impacts relative to the other alternates (Tables 3-12 and 3-13).

Those alternates that remained, 5A, 5B, and 5E were similar in alignment. Each connected to the existing interchange, with 5B using existing right-of-way into the interchange and 5A using a straighter alignment requiring additional right-of-way.

Alternate 5A was recommended for elimination (see Tables 3-12 and 3-13) due to the high number of diagonal severances. In examining the potential associated impacts, the severity of the agricultural impacts was determined to outweigh the benefit of a straighter connection.

Alternates 5B and 5E were recommended to be carried forward for further analysis. The following provides a listing of the advantages and disadvantages of each.

Alternate 5B
Advantages (see Tables 3-12 and 3-13)

- requires a single interchange;
- impacts second lowest area of productive farmland;
- affects lowest number of farm owners and operators;
- utilizes a high amount of existing right-of-way;
- minimizes impacts to wetlands;
- crosses the fewest number of intermittent streams;
- avoids impacts to woodlands; and
- severs the lowest number of farm operations.

Disadvantages

- impacts access to a relatively high number of business and residences;
- displaces five residences;
- impacts the second highest number of otherwise affected farm operations; and
- requires reconstruction of existing interchange.

Alternate 5E
Advantages (see Tables 3-12 and 3-13)

- no residential displacements;
- lowest total right-of-way required;
- low woodland impacts;
- no impacts to wetlands; and
- reduces impacts to 11th Avenue and the existing interchange.

Disadvantages

- requires two interchanges;
- impacts access of a greater number of businesses/residences;
- severs higher number of farms;
- crosses greatest number of intermittent streams;
- impacts relatively high number of farm operations; and
- uses least amount of existing right-of-way.

Table 3-12. Summary of Potential Impacts Associated with Each U.S. Route 34 Study Alternate (Phase II), Section II

Previously Labeled Alternates Section 5	5A	5B	5C	5E	5G	5H
New Alternates Nomenclature	5A	5B	5C	5E	5G	5H
Traffic and Transportation						
No. of Interchanges	1	1	2	2	1	1
No. of At-grade Crossings	3	5	5	4	4	6
No. of Roads Closed	2	2	2	2	2	2
No. of Businesses/Residences with Access Impacted	1	3	3	4	0	2
Socioeconomic/Land Use/Natural Resources						
No. of Non-Farm Residential Displacements	0	1	0	0	0	1
No. of Farm Residential Displacements	3	4	1	0	2	6
No. of Non-Agricultural Business Displacements	0	0	0	0	0	0
No. of Agricultural Business Displacements	0	0	0	0	0	0
Total Right-of-Way, ac	218	220	221	198	231	232
Existing Right-of-Way Utilized, ac	53	61	10	7	44	74
Total Area of Wetland Impact, ac	0.02	0.01	0.21	0	0.21	0.21
Area of Floodplain Encroachment, ac	0	0	0	0	0	0
No. of Perennial Streams Crossed	0	0	0	0	0	0
No. of Intermittent Streams Crossed	7	6	12	13	7	7
Utility Interference (Minor; Major)	Major	Major	Minor	Minor	Major	Major
Agriculture						
Area of Productive Cropland/Pasture, ac	177	178	203	190	191	182
Area of Woodlands, ac	1	0	3	1	2	2
Area of Other Agricultural Land, ac	40	42	15	7	38	49
Number of Owners Affected	26	20	23	20	26	25
Number of Operators Affected	17	14	18	16	17	17
No. of Severed Farm Operations (by tract)	8	4	11	9	11	4
No. of Otherwise Affected Farm Operations (by tract)	8	10	9	8	6	14

Alternate recommended for elimination from further consideration.

Source: Harding ESE, 2001.

Table 3-13. Potential Wetland Impacts Associated with Each U.S. Route 34 Study Alternate (Phase II), Section III

Alternates	INHS Site #	INHS Classification	Size (acres)	FQI Value	C Value Mean	Impact Area (acres)	Impact Area (% of total)	Total # Wetlands Impacted	Total Acres Impacted
5A	40*	Sedge meadow	0.32	9.2	2.9	0.02	6	1	0.02
5B	40*	Sedge meadow	0.32	9.2	2.9	0.01	3	1	0.01
5C†	40*	Sedge meadow	0.32	9.2	2.9	0.21	66	1	0.21
5E	--	--	--	--	--	--	--	0	0
5G	40*	Sedge meadow	0.32	9.2	2.9	0.21	66	1	0.21
5H	40*	Sedge meadow	0.32	9.2	2.9	0.21	66	1	0.21

Alternate recommended for elimination from further consideration.

* Potential impacts associated with INHS wetland site #40 vary as INHS identified 7 small, discrete wetlands as 1 wetland site.
† There are no impacts to wetlands along Alternate 5E.

Source: Harding ESE, 2001.

3.5.5.4 Section IV

The area defined as Section IV represents the same area previously labeled Section 6 (Phase I). This section begins north of the U.S. Route 34/67 interchange and ends east of Monmouth. Monmouth improvement concepts were developed which included freeway and expressway concepts. Detailed discussion is provided in Section 3.2.4. The recommendation was made to carry the upgraded expressway concept forward for further study.

By combining the recommended alternates in each section, four end-to-end build alternates, and the No Action alternative, were recommended for further analysis and documentation in this EIS (Figure 3-11). The four build alternates were labeled to be consistent with the initial division of the project corridor into six sections (see Section 3.5.1 and Figure 3-3). As recommended, the remaining study alternatives included:

- 1M2B/3E4B/5B/6 (existing Route 34/Route 67 and Route 34 through Monmouth);
- 1M2B/3E4B/5E/6;
- 1M2B/3G4B/5B/6;
- 1M2B/3G4B/5E/6; and
- No Action.

3.6 Development of Final Study Alternates

The final build study alternates for improving U.S. Route 34 to a four-lane expressway included:

- A single alignment from Carman Road to east of TR111/Bogus Hollow Road (Section I);
- Two alignment alternates from east of TR111 to west of TR190 (Biggsville area bypass) (Section II);
- A single alignment from west of TR190 to TR26 south of Kirkwood (Sections II and III);
- Two alignment alternates from TR26 south of Kirkwood to U.S. Route 67 at the existing U.S. Route 34 interchange (Section III); and
- An upgraded expressway concept from north of the U.S. Route 34/67 interchange to just east of Monmouth.

The methodology for evaluating the Final Study Alternates was similar to that used for conducting the Preliminary Study Alternate evaluations. The alignments of each of the study alternates were refined to better approximate right-of-way needs and comply with roadway design specifications. The same approach used for the Phase II evaluation of preliminary study alternates was also used for comparison of the remaining alternates.

A detailed analysis of the alternates for the Biggsville bypass (Table 3-14), and south of Kirkwood to U.S. Route 67 conducted to determine if the study alternates could be reduced to a single alignment. The summary of the analysis is outlined below.

Table 3-14. Summary of Potential Impacts Associated with the Biggsville Bypass Alternates, Section II

	Alternates	
Resource Category	3E	3G
Traffic and Transportation		
Total Length (meters)	7,700	8,000
No. of Interchanges	0	0
No. of At-grade Crossings	7	6
No. of Roads Closed	1	2
No. of Businesses/Residences with Access Impacted	4	9
Earth Excavation (cubic meters)	436,400	431,800
Borrow Excavation (cubic meters)	71,800	27,000
Length of Access Road Pavement (meters)	1,400	1,800
Socioeconomic/Land Use/Natural Resources/Cultural Resources		
No. of Non-Farm Residential Displacements	1	0
No. of Farm Residential Displacements	4	0
No. of Non-Agricultural Business Displacements	2	0
No. of Agricultural Business Displacements	0	0
Total Right-of-Way to be Acquired, ac	172	186
Existing Right-of-Way to be Reused, ac	18	9
Total Area of Wetland Impact, ac	0.93	0.34
Area of Floodplain Encroachment, ac	7.76	8.09
No. of Perennial Streams Crossed	1	1
No. of Intermittent Streams Crossed	8	2
Utility Interference (Minor; Major)	Major	Minor
No. of Archaeological Resources Affected	2	0
No. of Historic Structures Impacted	0	0
Agriculture		
Area of Productive Cropland/Pasture, ac	147.36	162.04
Area of Woodlands, ac	9.08	7.47
Area of Other Agricultural Land, ac	33.46	14.67
Number of Owners Affected	29	27
No. of Severed Farm Operations (by tract)	15	17
No. of Otherwise Affected Farm Operations (by tract)	9	8

Source: Harding ESE, 2001.

3.6.1 Biggsville Bypass Alternates

Two Biggsville bypass alternates included 3E and 3G. Alternate 3E followed more closely along the existing U.S. Route 34 alignment to the east of Biggsville before dropping south near TR132 (see Figure 3-11). Alternate 3G diverges from the existing facility as it enters Section II, approximately ½ mi west of TR94. This alternate stays to the south of Union School and converges with the alignment of Alternate 3E along the crossing of South Henderson Creek. The recommendations and the associated advantages and disadvantages of each of the alternates are listed below. For evaluation purposes, typical right-of-way widths of 80 m (approximately 262 ft) were used.

Recommendation: Alternate 3G was recommended as part of the final build alternate (i.e., preferred alternative)

Alternate 3E
Advantages (see Table 3-14):

- utilizes more of the existing right-of-way; and
- impacts less cropland/pasture.

Disadvantages

- results in 7 displacements (1 non-farm residence, 4 farm residences, and 2 non-agricultural businesses/restaurants);
- incurs major utility impact including the relocation of a cellular phone tower, a GTE telephone switching station, and 600 m of 8 fiber optic lines;
- raises safety concerns regarding the mainline traffic interaction with Union High School traffic;
- impacts greater numbers (9) of streams or intermittent streams;
- projected greater number of uneconomical remnants;
- requires greater amount of borrow excavation; and
- contains greater number (6) of median openings.

Alternate 3G
Advantages (see Table 3-14)

- no displacements;
- no major utility impacts;
- results in safer access to Union High School due to mainline traffic being moved away from the school entrance;
- crosses fewer streams (3);
- projected fewer number of uneconomical remnants resulting from farm severances;
- requires less borrow excavation;
- contains 4 fewer median openings resulting in safer, more efficient travel for through traffic; and
- reduces wetland impacts.

Disadvantages

- utilizes less of the existing right-of-way;
- impacts more cropland/pasture;
- includes greater number of businesses/residences with access impacted; and
- requires maintaining an additional 32 km (2 mi) (relative to 3E) of existing U.S. Route 34 (from TR 94 to TR 178).

In addition, there are no impacts to documented locations supporting threatened or endangered species, or impacts to special areas or special habitats by either alternate.

3.6.2 South of Kirkwood/Connection to U.S. Route 67 Alternates

Two alignment alternates remain in Section III, which represent two options at connecting to U.S. Route 67. Alternate 5B generally parallels the existing route, while Alternate 5E runs along east-west property lines through agricultural fields. The recommendation through this area and the related advantages and disadvantages of the alternates are described below.

Recommendation: Alternate 5B was recommended as part of the preferred alternative.

Alternate 5B
Advantages (Table 3-15)

- requires considerably less borrow excavation;
- requires reduced total length of access road;
- utilizes more of the existing right-of-way;
- crosses fewer (7) streams; and
- impacts less cropland/pasture area.

Disadvantages

- results in more displacements (4);
- affects higher number (4) of farm operators;
- impacts major utilities including the relocation of 1,200 m of 8 fiber optic cables and 4,500 m of gas transmission line;
- impacts more farm structures; and
- requires road closures on TR70 and 160th Avenue.

Alternate 5E
Advantages (see Table 3-15)

- affects fewer farm operators (15);
- no impacts to the gas transmission line; and
- impacts fewer farm structures.

Disadvantages

- requires considerably more excavation for borrow;
- requires greater length of access road;
- utilizes less of the existing U.S. Route 34 right-of-way;
- impacts utility via the relocation of 1,200 m of 8 fiber optic cables;
- crosses twice as many (14) streams as 5B;
- impacts a greater amount of cropland/pasture area; and
- requires closure of TR70, 150th Avenue, and 160th Avenue.

There are no business displacements or impacts to any locations supporting documented threatened or endangered species, or to special areas or special habitats for either of the alternates.

Table 3-15. Summary of Potential Impacts Associated with South of Kirkwood/Connection to U.S. Route 67 Alternates, Section III

	Alternates	
Resource Category	5B	5E
Traffic and Transportation		
Total Length (meters)	10,600	9,300
No. of Interchanges	1	2
No. of At-grade Crossings	5	4
No. of Roads Closed	1	1
No. of Businesses/Residences with Access Impacted 3	4	
Earth Excavation (cubic meters)	238,300	199,300
Borrow Excavation (cubic meters)	351,100	755,600
Length of Access Road Pavement (meters)	1,440	2,200
Socioeconomic/Land Use/Natural Resources/Cultural Resources		
No. of Non-Farm Residential Displacements	1	0
No. of Farm Residential Displacements	5	1
No. of Non-Agricultural Business Displacements0	0	
No. of Agricultural Business Displacements	0	0
Total Right-of-Way to be Acquired, ac	159	207
Existing Right-of-Way to be Reused, ac	56	7
Total Area of Wetland Impact, ac	0	0
Area of Floodplain Encroachment, ac	0	0
No. of Perennial Streams Crossed	0	0
No. of Intermittent Streams Crossed	7	14
Utility Interference (Minor; Major)	Major	Major
No. of Archaeological Resources Affected	1	2
No. of Historic Structures Impacted	0	0
Agriculture		
Area of Productive Cropland/Pasture, ac	130.29	180.81
Area of Woodlands, ac	0	1.34
Area of Other Agricultural Land, ac	84.54	30.91
Number of Owners Affected	26	17
Number of Operators Affects	19	15
No. of Severed Farm Operations (by tract)	9	11
No. of Otherwise Affected Farm Operations (by tract)	11	6

Source: Harding ESE, 2001.

3.7 Summary of Proposed Action/Preferred Project Alternative

The evaluation of the consequences of each of the Final Study Alternates resulted in the recommendation of a single preferred build alternate, that also implements ITS and TSM elements within the Monmouth Area (Figures 3-12 and 3-13). Beginning at the western terminus, this alignment connects to the recently completed four-lane improvement west of Carman Road, includes a new interchange with Carman Road, and continues east along the existing right-of-way until approximately CH15, also known as Lock-and-Dam Road where it angles northeast paralleling and east of existing U.S. Route 34. The preferred alternative then turns due east along existing U.S. Route 34 holding the south right-of-way line, crossing the bluffs of the Mississippi River at approximately Illinois Route 164. Immediately west of the Illinois Route 164 intersection, a future interchange is proposed. Although not intended to be constructed in the build year, right-of-way will be cleared for environmental issues to facilitate construction at a future date.

Continuing to the east, the proposed route uses existing right-of-way until passing the east Bogus Hollow Road access at which point the alignment diagonals southeast to a line approximately ½ mi south of existing U.S. Route 34 near TR102 where the alignment turns due east along property lines south of Union School and South of Biggsville. An interchange is proposed where the route intersects Illinois Route 116/Illinois Route 94, south of Union School and the IDOT maintenance facility. At approximately TR150, the preferred alternative turns northeast until meeting the existing right-of-way near TR190. Between existing U.S. Route 34 and proposed U.S. Route 34, TR150 is recommended for an upgrade to state route standards. The alignment then carries east along existing U.S. Route 34 holding the south right-of-way line to approximately TR26 south of Kirkwood where it heads north and then east along the existing 'S-curve' around Kirkwood and then easterly along existing U.S. Route 34 holding the south right-of-way. The existing interchange at U.S. Route 67 will be modified slightly to improve the design speed of the predominant ramp movements, eastbound to northbound and southbound to westbound, while minimizing impacts to the existing bridge structure. Improvements to the existing four-lane facility from this interchange, around Monmouth to the project's east terminus east of Illinois Route 164 will involve implementation of TSM actions including intersection improvements at West Broadway, West Harlem, North Main, North 6th Street, North 11th Street, 87th Avenue and Illinois Route 164 and rehabilitation of the existing pavement. Intersection improvements may include new traffic signals, traffic signal modifications, additional turn-lanes, and access control improvements to the side roads such as relocating access drives.

Several points of access will be maintained including median crossings at state, county and township roads and at certain residential and farm entrances identified as being necessary to facilitate the movement of farm equipment. The cross roads to remain open include Carman Road (with an interchange), TR38, TR127 (850E), CH15, existing U.S. Route 34 connection, TR66, Illinois Route 164, TR112 (Bogus Hollow West), TR111 (Bogus Hollow East), TR94, Illinois Route 94/Illinois Route 116 (with an interchange), TR138, TR150, TR178, TR190, CH2, CH1, TR210, TR4, TR18, TR26, CH11 (Smithshire Road), TR157 (Walnut Street), SBI 8 (Kirkwood Road), TR48, TR62, and TR70. The U.S. Route 67 interchange will also remain open. Only three intersections with direct access to existing U.S. Route 34 will not have direct access with the proposed improvement. These locations include TR137A, west of Carman Road, but within 1,500 m of the Carman Road westbound entrance ramp; TR102, west of and within 1,500 m (4,921 ft) of the Illinois Route 94/Illinois Route 116 interchange ramp; and TR122, east of and within 1,500 m (4,921 ft) of the proposed Illinois Route 94/Illinois Route 116 interchange. At Carman Road, TR137 north of Route 34 and west of Carman Road will be re-connected to provide access to the subdivision west of Carman Road on the north side.

Currently, there are two operational ITS items installed within the right-of-way for the preferred alternative. A camera is located at the existing Carman Road intersection and will most likely be relocated or replaced once the interchange is constructed to aid in monitoring the interchange. Around Monmouth, the existing intersection signals are interconnected to provide a better signal progression and reduce delays. This will also continue under the future improvements.

Installation of new ITS facilities will include the construction of weather monitoring stations and potentially installing additional cameras to monitor the major interchanges for weather conditions and traffic delays. These items will be incorporated into the Phase II contract plans at locations that will benefit from this technology.

The right-of-way needed to construct the preferred alternative includes 240 ha (593 ac) of existing IDOT right-of-way and 278 ha (687 ac) of new right-of-way.

Roughly 2.5 million cubic meters of fill material will be required for the construction of the preferred alternative. Of this 2.5 million cubic meters, 1.4 million cubic meters of material will be excavated as part of the preferred alternative and 1.1 million cubic meters of materials will be required as borrow.

Appendix C (Exhibit 1) provides an aerial mosaic of the preferred alternative with environmental constraints from Carman Road through Monmouth. The ultimate interchange recommended footprint in the vicinity of Illinois Route 164 is presented in Appendix C, Exhibit 2.